DEPARTMENT of ENVIRONMENTAL SERVICES
Water Division - Watershed Management Bureau

LAKE TROPHIC DATA

MORPHOMETRIC:

Lake:	WILLEY POND, BIG	Lake Area (ha):	19.22
Town:	STRAFFORD	Maximum depth (m):	7.5
County:	Strafford	Mean depth (m):	3.6
River Basin:	Merrimack	Volume (m^3):	689000
Latitude:	43°17'19" N	Relative depth:	1.5
Longitude:	71°10'58" W	Shore configuration:	1.22
Elevation (ft):	803	Areal water load (m/yr):	11.25
Shore length (m):	1900	Flushing rate (yr^{-1}):	3.10
Watershed area (ha):	388.5	P retention coeff.:	0.54
% watershed ponded:	3.6	Lake type:	natural w/dam

BIOLOGICAL:		9 February 2000	22 July 1999
DOM. PHYTOPLANKTON (% TOTAL)	#1	SPARSE - NO DOMINANT	MOUGEOTIA 99%
	#2		
	#3		
PHYTOPLANKTON ABUNDANCE (units/mL)			
CHLOROPHYLL-A (µg/L)			1.23
DOM. ZOOPLANKTON (% TOTAL)	#1	KERATELLA>99%	NAUPLIUS LARVA 51%
	#2		CALANOID COPEPOD 33%
	#3		KERATELLA 11%
ROTIFERS/LITER		23	7
MICROCRUSTACEA/LITER		<1	56
ZOOPLANKTON ABUNDANCE (#/L)		23	63
VASCULAR PLANT ABUNDANCE			Scat/Common
SECCHI DISK TRANSPARENCY (m)			6.8 Visible on bottom
BOTTOM DISSOLVED OXYGEN (mg/L)		14.5	7.7
BACTERIA (E. coli, #/100 ml)	#1		1
	#2		< 1
	#3		

SUMMER THERMAL STRATIFICATION:

not stratified

Depth of thermocline (m): None
Hypolimnion volume (m^3) : None
Anoxic volume (m^3) : None

CHEMICAL:

Lake: WILLEY POND, BIG
Town: STRAFFORD

	9 February 2000		22 July 1999		
DEPTH (m)	2.0	4.0	2.0		5.0
pH (units)	4.8	4.5	4.7		4.7
A.N.C. (Alkalinity)	-2.0	-1.4	-0.7		-0.8
NITRATE NITROGEN	< 0.05	< 0.05	< 0.05		< 0.05
TOTAL KJELDAHL NITROGEN			0.10		0.20
TOTAL PHOSPHORUS	0.004	0.003	0.001		0.001
CONDUCTIVITY (μmhos/cm)	29.4	31.4	24.9		25.0
APPARENT COLOR (cpu)	7	7	< 5		< 5
MAGNESIUM			0.27		
CALCIUM			< 1.0		
SODIUM			1.3		
POTASSIUM			< 0.40		
CHLORIDE	2	2	< 2		< 2
SULFATE	6	6	6		7
TN : TP			100		200
CALCITE SATURATION INDEX					

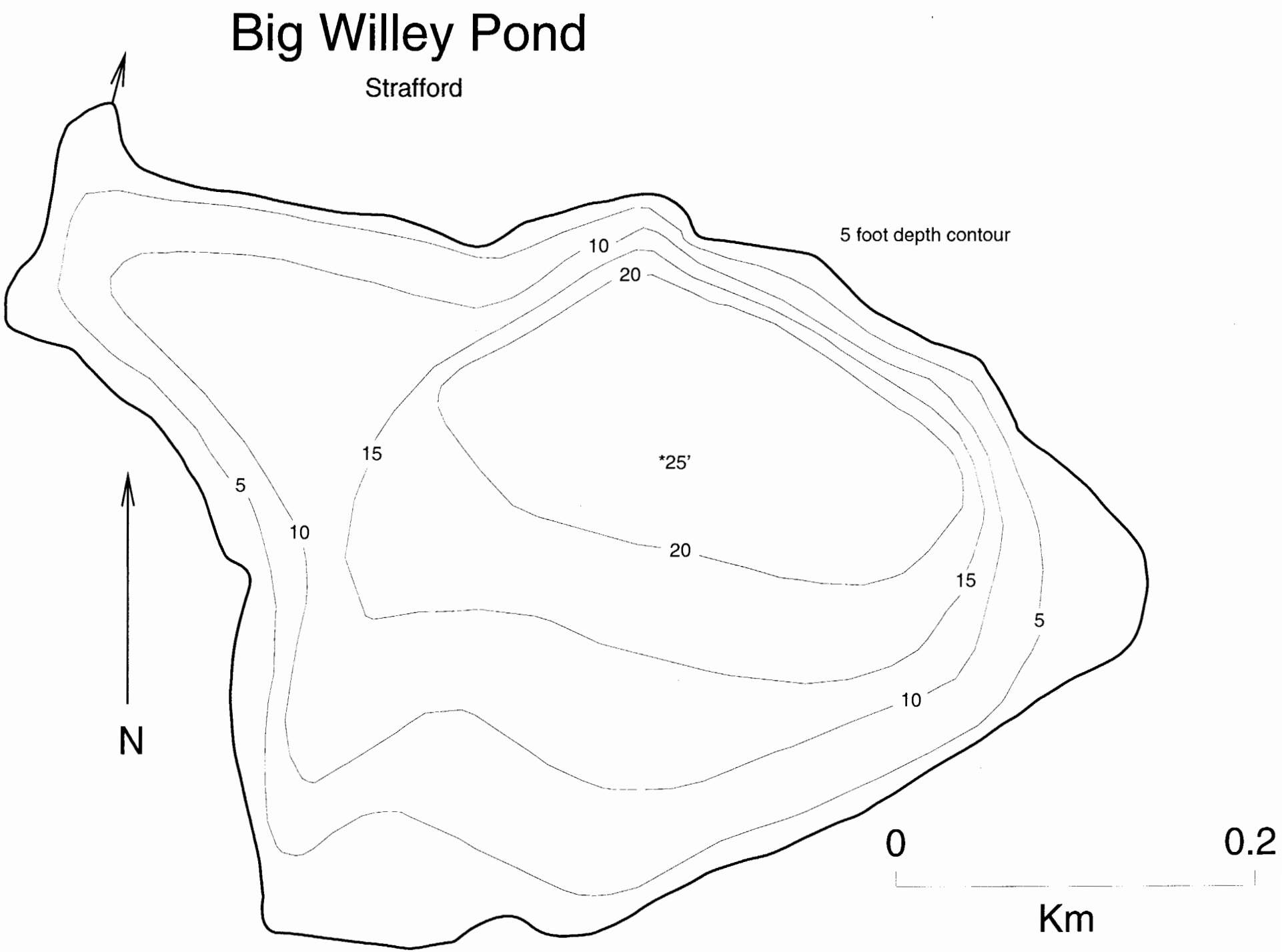
All results in mg/L unless indicated otherwise

TROPHIC CLASSIFICATION: 1999

D.O.	S.D.	PLANT	CHL	TOTAL	CLASS
**	0	2	0	2	Oligo.

COMMENTS:

1. AKA Lower Willey Pond.
2. This pond was previously surveyed and classified in 1987. There was no change in classification and essentially no change in water quality between the two dates.
3. This is a very acidic and very clear water oligotrophic pond with negative buffering (ANC) capacity.
4. Planktonic algal productivity was very low but the filamentous alga *Mougeotia* was abundant along the shore. This is not an unusual occurrence in acid-stressed ponds. Fragments of *Mougeotia* comprised all the planktonic algae.


Big Willey Pond
Strafford
5 foot depth contour
10
20
15
*25'
5
10
20
15
5
10
N
0
0.2
Km

FIELD DATA SHEET

LAKE: WILLEY POND, BIG TOWN: STRAFFORD
DATE: 07/22/1999 WEATHER: Sunny, Warm, Breezy

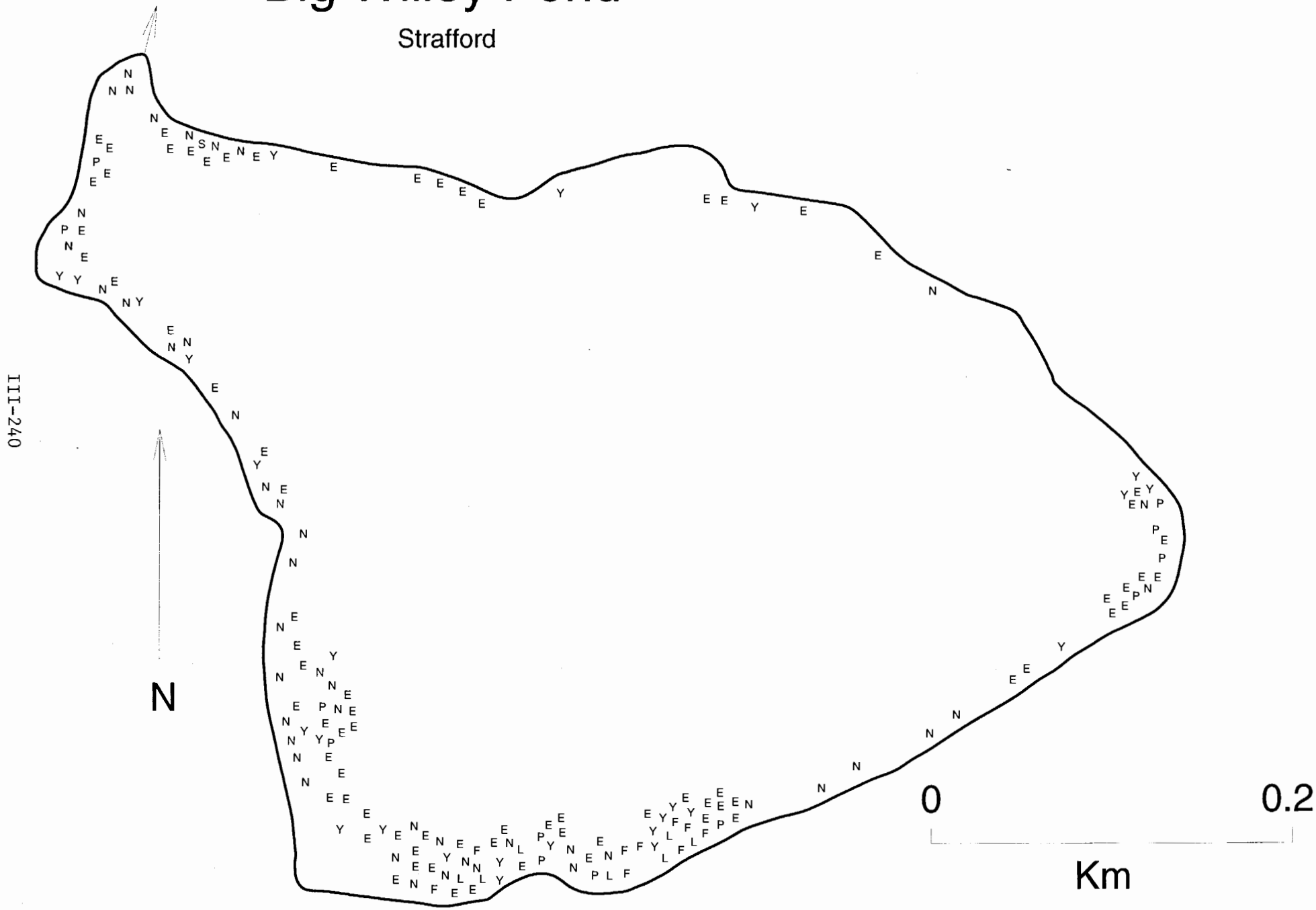
	DEPTH (M)	TEMP (°C)	*DISSOLVED OXYGEN	OXYGEN SATURATION
	0.1	25.7	7.8	96 %
	1.0	25.7	7.7	95 %
	2.0	25.5	7.7	94 %
	3.0	25.5	7.7	94 %
	4.0	25.4	7.7	94 %
	5.0	25.3	7.8	94 %
	6.0	25.3	7.8	95 %
	7.0	25.4	7.8	94 %

SECCHI DISK (m): 6.8 VOB COMMENTS:
BOTTOM DEPTH (m): 6.8
TIME: 1307

*Dissolved oxygen values are in mg/L

Big Willey Pond

Strafford



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AQUATIC PLANT SURVEY

LAKE: WILLEY POND, BIG TOWN: STRAFFORD DATE: 07/22/1999

Key	PLANT NAME		ABUNDANCE
	GENERIC	COMMON	
E	Eriocaulon septangulare	Pipewort	Common
N	Nymphaea	White water lily	Scat/Common
Y	Nuphar	Yellow water lily	Scat/Common
P	Pontederia cordata	Pickerelweed	Sparse
F	Nymphoides cordatum	Floating heart	Sparse
S	Sparganium	Bur reed	Sparse
L	Lobelia dortmanna	Water lobelia	Sparse
f		Filamentous algae	Abundant
		Bottom growth	Common/Abun

OVERALL ABUNDANCE: Scat/Common

GENERAL OBSERVATIONS:

1. Filamentous algae (*Mougeotia*) were abundant throughout the pond, particularly in shallow areas.
2. Sterile (non-flowering) bottom growth was common in shallow areas.
3. *Chamaedaphne* (leatherleaf) was present along most of the shoreline.